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Radiological Risk Reduction in Uruguay: An International Alternative Technology Pilot

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Radioactive materials play an important role in commercial, medical, and research facilities across the world. However, the benefits of these sources must be balanced with sufficient security to prevent radiological materials from falling into the wrong hands. In its efforts to prevent high-activity radiological materials from being used in acts of terrorism, the Department of Energy's (DOE) National Nuclear Security Administration (NNSA) Office of Radiological Security (ORS) helps reduce the global reliance on high-activity radioactive sources by leading efforts to support the adoption and development of non-radioisotopic alternative technologies. ORS engages in efforts internationally to exchange technology information with users of cesium-137 based irradiators who are interested in converting to viable non-radioisotopic alternatives and understand and reduce obstacles preventing the transition to an alternative technology.

As the maturation of technology has led to the availability of non-radioisotopic alternative technologies, many countries are exploring the transition from cesium-based blood irradiators to x-ray based blood irradiators. Today, there are six x-ray irradiator models that have been approved for use in this application in the U.S. and European Union, facilitating this transition.

The first such alternative technology project under the ORS program has been replacement of a cesium chloride blood irradiator at the Espanola Hospital in Montevideo, Uruguay. In this case, both because it was a project implemented outside the U. S. and because of circumstances unique to Uruguay, implementation of the project presented a unique set of challenges. Those challenges, and how the site and the relevant Uruguayan regulatory agencies addressed those challenges, have provided policymakers, regulators and site operators with lessons learned and tools to assist in implementation of future international alternative technology projects.

These tools have come about because of the need to address a range of issues and requirements, including:

1) The participation and agreement of the relevant in-country regulatory agencies and the need to satisfy regulatory requirements for licensing and operation of a new medical device.
2) The need to work with the site facilities personnel, in addition to the medical personnel, to establish clear requirements for infrastructure modifications required to install the x-ray device, including electrical and cooling requirements;
3) The proper pathway and paperwork necessary to have the x-ray device clear Customs once it arrives in-country;
4) Ensuring the availability of timely local technical support in case problems should arise with the replacement device either before or following delivery and for follow-on preventive maintenance. In some cases, this may involve factory authorized training for a local or regional service provider; and
5) Confirmation of a safe and secure disposition pathway for the existing cesium or cobalt unit, which would include having licensed companies be able to remove the device inside or outside the country, remove the sources safely and securely and dispose of them according to relevant regulations.

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